

# RECORDS OF THE PAST

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## KUTCHUK AYIAH SOFIA AND SAN VITALE

AS THE steamer approaches the Bosphorus from the Sea of Marmora, the minarets of Hagia Sophia and of the Achmedieh Mosque, the Seraskier Tower, and other prominent buildings attract the attention of the observer; but only the informed would be likely to notice the single minaret of the Kutchuk Ayiah Sofia, the so-called Little Hagia Sophia, below the Achmedieh, close by the railroad track which has intruded itself into the sacred precincts of Seraglio Point.

A scholarly article relative to this Little Sophia, more correctly the Church of SS. Sergius and Bacchus, appeared in the RECORDS OF THE PAST, December, 1906, in which the domical form was ably discussed by Dr. Allan Marquand,\* who concluded his paper by accepting as probably most correct the drawing of Choisy, a cut of which he presented to the reader.

In February, 1907, the RECORDS OF THE PAST contained a note from Prof. Howard Crosby Butler, based on personal observation of the building. This correctly states that a series of horizontal sections would reveal varying profiles.

With a view to ascertain somewhat definitely the structural form of this church, particularly in regard to the alleged relation to that of San Vitale in Ravenna, the writer recently visited both churches and inspected carefully the internal and external structure of both. The galleries in neither building are of sufficient height to assist in

\*For illustrations see RECORDS OF THE PAST, Vol. V. pp. 354-361.

rendering any hasty examination of authoritative value. It is only by passing from arch to arch, and by comparing minutely the conformation of the dome in relation to the octagon, that a judgment approaching accuracy may be formed.

The half-tone of the interior of SS. Sergius and Bacchus, taken from a recent photograph, represents accurately the present appearance of the interior; but even if it had been possible to extend upward the view so as to exhibit what is above the windows appearing in the upper part of the photograph, no clearer notion could be obtained from it, so delusive is the gradual blending of one form into the other.

The contour of the dome as it rises from the angles of the octagon is easily discernible. The angle blends upward into a concave not unlike the section of a melon. There is, however, much irregularity, as if the plastering had been unskilfully done, the curve in some cases bending uniformly and in others ascending stiffly and then inclining more sharply toward the center.

The contour of the sections over the windows is more difficult of determination, as the eye is at first misled by the form of the intervening sections. After a resolute fixing of his attention on the sections over the windows, the observer is inclined to conclude that they are cylindrical rather than spherical. It is possible that a straight-edge placed against them horizontally might show a slight concavity above the windows; but it did not so appear to the writer.

An examination of the exterior of the building confirms this conclusion, the dome possessing positive indications of the alternate flatness and concavity of the sections. There is a humping or convexity directly corresponding to the concavity within, and there are also alternating with the ridges flat sections corresponding to the barrel-vaulting within.

The description which Lethaby gives (*Medieval Art*, p. 44) is so concise as to be obscure. He says: "Each angle of the octagon being rounded into a niche, the dome springs in 16 sides." Professor Butler criticises this description, saying: "The latest description of this dome, that of Mr. Lethaby, does not appear to me to be altogether accurate. He is certainly inaccurate in saying that each angle of the octagon is rounded into a niche, since the octagon below the dome shows 8 obtuse angles, but no niches." It is possible that some light may be thrown on the matter by a consideration of the structure of the famous church in Ravenna, which possesses a form remarkably similar.

On entering the shadowy church of San Vitale the observer discovers the same illusion, the dome rising from the octagon without a cornice or any formal drum construction. The interior presents the same octagonal form with the pillars indented by the obtuse angles, which are characteristic of SS. Sergius and Bacchus.

The decorated plastering baffles the eye in the attempt to discover the precise elevation at which the octagon ceases and the dome

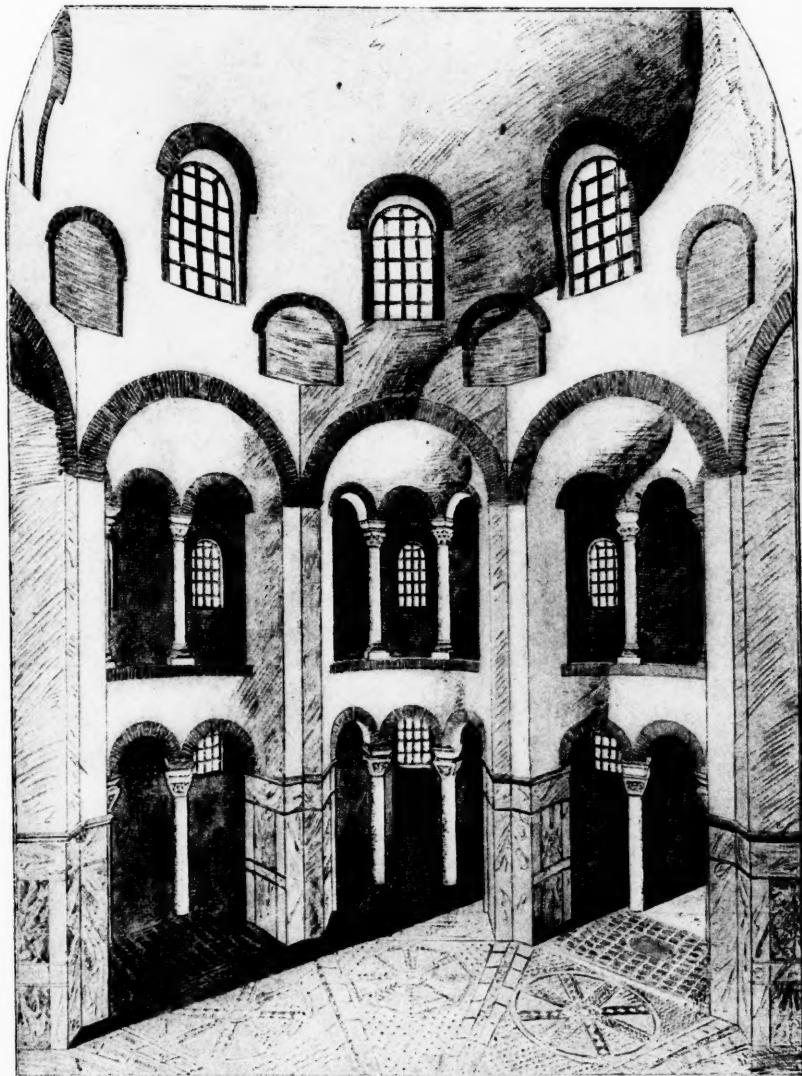


FIG. 2. ORIGINAL FORM OF SAN VITALE

begins. Whether from the floor or from the galleries, the search is in vain. The reveals of the windows, however, display not only the springing of the dome; but make it clearly evident that the brick arches above them are concaved to conform to the curve of the dome. From the windows upward the domical form is beyond dispute.

What of the portions of the roof above the angles of the octagon? The walls were inspected from section after section of the gallery



FIG. 3. EXTERIOR OF SAN VITALE

without definite result. The general impression was obtained that the spherical form was begun well down in the spandrel of the supporting arches, that the angles were filled in more and more as the building rose. At length the middle opening, seen in the cut of the interior, was visited, and then the secret was out. The plaster above the opposite spandrel had fallen, and in the place of the flying angels there was bare brickwork and an arch similar in construction to those above the windows.

Cut No. 2 shows the structure of the original brickwork, demonstrating that the dome is constructed in pendentive on the 16 arches, the plaster-work filling the space below the arches of the lower row and blending downward into each spandrel. The beautiful frescoes almost defeat the eye in the attempt to read the riddle; but what the most careful inspection had made probable, an accident to one of the spandrels happily revealed.

If Mr. Lethaby conceived of niches of this sort in SS. Sergius and Bacchus, hidden beneath the plaster, his description may be accurate; but otherwise it is not easily understood.

What relation has San Vitale to the Kutchuk Ayiah Sofia? It is manifest that what was attempted crudely and timidly in the latter was accomplished skilfully and admirably in the former. Whether

the architect of the Constantinople church improved on his earlier plans in the erection of San Vitale is a question to be answered otherwise than by mere comparison of structure. In any case, the resemblance, especially in the treatment of the spring of the dome from the angles of the octagon is worthy of note. The presumption that San Vitale is an improved Kutchuk Ayiah Sofia is assuredly not unnatural.

These are days when the past is emerging for us from the dim recesses of almost forgotten libraries. Shall we not hope that some manuscript of Justinian's day may yet come to light, telling of the genius who planned and executed the designs which have made the name, Byzantine, significant of majestic architecture in every language of to-day?

JAMES CARTER.

Lincoln University, Pa.



PAINTED STELÆ AT PAGASÆ.—The most important finds at Pagasæ during 1907 were the painted stelæ. Many are unbroken, and the colors are still fresh. They are believed to include works from about 500 B. C. to the beginning of the Christian era—in other words, they cover the entire period of the rise, perfection, and decline of Greek painting.

The stelæ are from 3 to 4 ft. high and 1 to 2 ft. broad; often there is a gable and a cornice at the top. The egg-and-dart design is frequent in the ornamentation. Many have inscriptions cut in the stone and then painted red. Some of the inscriptions give simply the name; others add some reflections. The pictures are similar in subject to the more familiar stelæ in bas-relief. The colors are warm and rich, dark reds and browns predominating, but violet, vermillion, blue, yellow, and green are also found. The most interesting is the so-called "Stele of the wife of Artitopos." Unfortunately, the stone is broken, but enough is left to give an idea of the scene depicted. It seems to be the deathbed scene of a young woman in childbirth. The husband sits at the foot of a couch, gazing at the face of his wife, while the nurse holds the child in her arms, hoping to distract the father's attention from his grief. The faces are painted in reddish-brown. The man's features are strong and beautiful.



GOLD AND SILVER OBJECTS FROM TEOTITLAN, MEXICO

The top figure and skull are of gold. The turtle shells are silver. The central figure is half gold and half silver. The 3 lower figures are gold, probably earrings

## AZTEC RUINS IN SOUTHERN MEXICO

### PART II

THE ancient pueblo of San Martin situated just across the river that runs past that village was next visited. The ruins commence with the large artificial hill that is built on the steep river bank, and extend for some distance south embracing graves, house sites, small mounds, and the large and small foundations like those of Teotitlan which are often confounded with house sites—they may be the same only perhaps represent the larger houses of mud and sticks; the natives call them *cimientos*, which means foundations. The large artificial hill here gave evidence of having been opened about 80 years ago, the entrance being at the top; other entrances seem to have been made or attempted, but these latter were made at the base of the mound and so, if my idea is correct, must be of a later date. The indications of random diggings were seen all around the mound. Some pieces of pottery were picked up that had been washed out of the hill and partly covered with earth; these were of the black clay that was generally used in Teotitlan for vases. A number of the hills in this vicinity have been entered. To the south of the main hill are the burial places, containing pottery, figures of clay and stone, like those of Teotitlan. Here, as in Teotitlan, there were squares marked off with stone slabs partly buried on edge, denoting the sites of former partly wooden, lightly built huts of the common classes; judging from the remains of these huts, they must have been very numerous; they appear to have generally one door. It is not likely that wood entered wholly into the construction of these houses, as lumber of all kinds is scarce here; it is more probable that the huts were constructed partly of wood, such as the frame, and that mud was daubed on the wooden framework in a somewhat similar manner as that in which the house of the Mexican peon is made. Old San Martin was no doubt quite a large Indian village, but was not as thickly populated and did not have the importance of Teotitlan. While at San Martin we made a trip to the small village of Los Cueces and rode over all the country around this settlement. About 6 miles south of Los Cueces we discovered what must have been a small village; a few house sites, and a number of low-lying graves were noticed lying side by side in line.

Not far from the plantation of Ayotla, on the face of a cliff, several pictures of men about 12 in. in height were found. They were not painted or outlined; but entirely depressed in the rock. It is impossible to say with certainty what they are intended to mean, but probably the most correct surmise is that they were meant for a

warning, situated as they are where an attack could be made. The figure of the man with a large ear might signify attention or danger; the club, protection. I could not attach any particular meaning to the other two rather indistinct figures; they may have some connection with the first. Other petroglyphs near San Martin were two outlined figures of the Sun. The radiating lines are very irregular, and have many scratches on their sides, clearly caused by the instrument slipping and making but faint scratches, and therefore not intentional, though it might be thought that they were intended to better represent the radiating lines of the Sun. The lines are deep in proportion to width; some of them are faint but still distinguishable, and apparently made with a sharp thin tool. Weathering has caused the discoloration of the lines from white, the natural color of the soft rock, to a slightly dark color. The first Sun is approximately 16 in. in diameter; the other is about  $\frac{1}{4}$  its size. On the roof of the cave about 6 ft. from the Sun figures a white hand and two blood-red hands were painted, similar to the blood-red hands so common in Yucatan, as Stephens tells us. In the vicinity of Teotitlan, on the bank of the canal that leads the water into the town, a number of cup sculptures were seen; they, however, occur singly. Groups of sculptures were not seen anywhere in the northern part of the state of Oaxaca.

The natural caves to the east and west of San Martin, near Ayotla, and near the hill called Las Tres Torres, show signs of having been occupied. The caves near San Martin have divisional walls of rock, partly cemented, and in the floor of the caves fragments of glazed pottery made by wheel were found. Furthermore conclusive proofs that the caves were occupied in recent times were discovered in the shape of nails driven into the walls and an iron ring stuck in a near-by rock. The supposition is that these almost inaccessible cliff-caves were occupied by robbers in recent times. Besides this late occupation they could have also been occupied by the Aztecs but no indications that would lead to such a conclusion or supposition were seen. As to the authorship of the figures of the Sun, notwithstanding the discoloration of the lines, they were made during the last 80 years and perhaps later—possibly by the robbers who are said to have inhabited these caves. The hands painted on the roof of the cave might be attributed to the Indians; the 3 figures of the men might also be credited to them.

In several places along the Rio Salado, near artificial mounds, fragments of metates were found that were of the usual metate material, and similar to those now used by the Mexicans; these remains of metates and metlapilles (tapering rubbers 15 in. long,  $2\frac{1}{2}$  in. in diameter<sup>1</sup>) are scarce considering their former extensive use. A few celts were found; some of them were of slate, taken, no doubt,

<sup>1</sup>See Prof. Frederick Starr's *Notes on the Ethnography of Southern Mexico*, p. 2. The metlapilli is the "child of the metate."

from the slate outcrop near Petlanco. These relics are not nearly so plentiful as they are farther east in the Mazatec country, where their use may have been more common. There is some indication that the Aztecs occupied certain parts of the Mazatec country, for some of the pottery found there, and especially the gold and silver relics resemble their work. In relation to Mazatec pottery and relics



IMPLEMENTS AND ORNAMENTS FROM MEXICO

First row, right to left: 1, Adz from Mitla; 2, from Teotitlan; 3, Adz of "greystone" from Mazatec County; 4, Copper adz from Mazatec County; 5, Copper adz from Teotitlan. Second row: 1, Adz from Mazatec County; 2, Adz from Pueblo Vujo; 3 to 6, Adzes from Mazatec County. Third row: 1, Shell charm from Teguistepéc; 2, Greenstone charm from Teguistepéc; 3, Clay monkey face from Teotitlan; 4, Chipped adz from cave in Mazatec Region; 5 to 7, Punches from Teotitlan; 8, Clay thimble from Mazatec County. Fourth row: 1, Clay part of distaff, Mazatec County; 2 and 3, charms from Mitla; 4 and 5, Points from Teotitlan.

they must belong to a later period, dating with their occupancy. The mounds near the junction of the San Lucas road with the Huautla road, and in other places of the Mazatec country show signs of having been made by the Aztecs. Especially foreign to the Mazatec country is the large slab of stone that covers the entrance to some of the mounds and which is a feature of the mounds of Teotitlan and

vicinity. Besides the relics found in these graves there is other evidence that these mounds are certainly intrusive work—probably Aztec.

San Bernardino is said to have been an Aztec military post; the people to-day speak the Aztec or Mexican, but not the pure language, this is probably due to the influence of the surrounding tribes.

Some of the pottery of Teotitlan is of fine clay, of very superior workmanship, and painted with figures and signs in the inside and outside; this is especially noticeable in the fine red bowls where the hieroglyphs, if so they may be called, are not purely decorative, but have some meaning, the same signs occurring on several bowls and dishes examined. The vessels, or vases are of the olla form, generally about 2 ft. high and are made of the black clay; a few dishes were made of this black burnt clay. The incense bowls are of a yellow clay. Vases or urns of natural and graceful form were unearthed near Teotitlan and in several places in its vicinity, their average size being from 18 in. to 2 ft; a sort of cement covered them making the urns appear white when the natural color was black; this cement was easily scraped or washed off; the pattern generally adhered to was the olla-shaped vessels of to-day; while some variations were seen, nearly all had round bottoms, were without ears and otherwise resembled ollas.

A singularly large and beautiful urn was taken from one of the rooms of El Fuerte; owing to the carelessness of the diggers in not removing the ashes and earth it contained (the ashes were probably the remains of some Cacique) it fell to pieces on coming in contact with the air; this was also the case with several almost perfect skeletons.

Incense bowls are rare; but while it is difficult to secure them entire, the mounds and artificial hills are covered with pieces of them; the broken legs, which generally terminate in an iguana head or snake head are scattered all over the large artificial hill and the mounds. By far the finest examples of pottery found anywhere in or near Teotitlan were the delicate plates that came from La Egllesia; they were covered with thick red paint, with figures and signs painted in black, decorating the inside and outside, and were the same as those found near El Fuerte; this pottery is the best burnt, strongest, and by far the finest seen anywhere in the entire region explored.

What especially attracted our attention at Petlanco was the large number of broken pottery pieces that were scattered all over the hills; these fragments were also seen on many level places where, however, they were not originally placed but had been washed by floods. One particular spot had a collection of broken idols of various sizes; judging from the legs and arms some of them must have been about 3 ft. high and similar to those of Teotitlan. This spot seems to have been selected as the place where only the idols were to be broken; near here a stone idol was found, it was also broken. According to

information gathered, it seems to have been the custom among these Indians to break up their idols once every year when the moon was in a certain phase, and in this ceremony they must have also included all their dishes, as it is the only way to account for the broken fragments of pottery scattered on any mound or near any sign of former habitation. Farther in the interior some of the old Indians said that they broke up all their old idols long ago by order of the priests. Such was the tradition of these people in the Mixteca. But how did it account for the broken pottery? It is possible that this custom may have originated with the priests' endeavor to put down idolatry.

Besides the iguana head and snake head that decorate the end of the legs of the incense bowls, the monkey face was also placed on ollas, perhaps for decorative purposes. It is evident that the monkey face was principally used on the black ollas of the larger size.

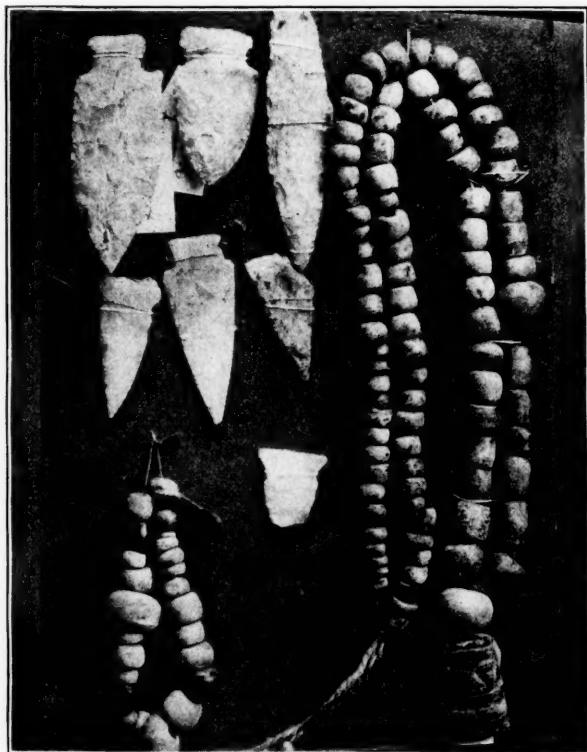
A few fragments of clay calendars were found on the hills near Teotitlan; judging from some exceptionally large pieces examined it seems that these and those farther south resemble, though not exactly, the Aztec calendar. The Teotitlan calendars have very prominent divisions, standing out nearly a quarter of an inch; they are round and range in size from the smallest, which are about 6 in. in diameter to the larger ones which are about 12 in. The divisions seem to differ from the calendars found farther south. (See Seller which I have read since writing this.) It was noticed that the usual circles were employed, but the characters were very indistinct from wear, so no safe conclusions can be drawn.

Near Teotitlan some large clay idols were unearthed; they were about 3 ft. high; in the usual sitting position with legs up; and with a crown or sort of crest rising from the head. They are to be found in many parts of the valley near San Martin. Several such idols were seen, some slightly different in their decoration and painting, and some being without any trace of paint, but all having the crest and 3 or 4 little circles at the front of the crown. The crest feature was also noticed on some of the stone idols of this vicinity. A perfect specimen was seen near La Eglisia; it had been uncovered by a recent washout. By its side was another idol, the only one of its kind seen; its head was entire, but the lower part of the body had been broken off; not having a photograph of this unusual head I am unable to discuss its features and decorations. Smaller clay idols are occasionally met with and stone idols of the usual type are common.

A gold idol mask found in the El Fuerte of Teotitlan is of soft gold, about 1 in. high, and of delicate workmanship. It is composed of two metals—gold and silver, one-half the face (I believe the left side) being of gold, the other half of silver; the parts do not appear to be soldered together, so closely and perfectly are they joined; the whole work is cleverly done, no trace of tools being visible. The figure must have been first cast and afterward polished. The crown is especially interesting, as it is very high, and the details of the deco-

rations are distinct; the sides of the face seem to be covered with a mantle ornamented with designs. Its face has a long, crooked nose, is absolutely expressionless, and on the whole rather resembles an Egyptian figure. It is a mere shell; indeed, all the figures whether of gold, silver or clay are hollow.

In the same apartment that contained the grave of the Cacique, mentioned at the beginning of Part I, the above figure and a number of others were found, having been placed in a vase, which contained a



OBJECTS FROM TEOTITLAN

number of hollow gold skulls, representing death masks, about  $\frac{1}{2}$  in. high—also cast figures as the rough edges on the inside and back plainly indicate. The inside is black and shows other signs that favor this conclusion. Evidently the figure was cast before it was polished over; a hieroglyphic sign adorns each side of the head near the ear. This vase also contained several thin sheets of gold, each having two holes at its upper end, which suggests their being pendant ornaments such as earrings, and the 3 lower figures in the illustration on page 184, which are plainly earrings. With these there were also some silver

turtles with rattles in them; a pair of gold pinchers; a perfect copper needle; several copper adzes or celts, one of which is herewith reproduced.

All come from El Fuerte with the exception of the needle, which is from a level foundation *cimiento* or house site. These few figures I was fortunate enough to see, but a great many others had been melted into gold rings and other ornaments.

A number of silver and other metallic figures were found in the Mazatec country, which adjoins the region of Teotitlan and pertains to the same district. These figures are, I suppose, Aztec. The Mazatec country is not a mining district, no ore-bearing rocks being found in any section, with the possible exception of Mazatlan, which is near Teotitlan. Teotitlan is a mining country, some of the quartz outcrops along the river bank of the Teotitlan River showing, by analysis of numerous specimens, some lead, silver and slight indications of gold; and the mounds in which these gold figures were found resemble in every respect the stone-roofed mounds of the Teotitlan regions. It is, therefore, to be presumed that these metallic objects of the Mazatec regions are of Aztec origin, if such a connection is not well established, the burden of proof would, at least, rest on any assertion to the contrary.

Numerous excavations have been made from time to time, within the last 70 years by persons seeking buried money that was supposed to be hidden during the late revolutionary times. These excavations occur everywhere and are occasionally met with near an artificial hill, with which, however, they have no connection, and must not be confounded. Such excavations can be seen to the south of Teotitlan.

New Iberia, La.

LOUIS M. N. FORSYTH.



PROFESSOR SAYCE AT MEROE.—On March 23 the *Daily Graphic* [London] published the following extract from a letter from Professor Sayce concerning his discoveries at the site of the city of Meroë: "At Gebel Baikal I excavated a little temple of Tahahka, previously unknown. The remains of the great Temple of Amon at Meroë are magnificent; fancy an enceinte wall of cut-and-dressed stone 22 ft. wide. It was approached from the east by an avenue of stone rams. We sent to Khartum the life-size statue of a king I found in the temple site, also an important Greek inscription of a King of Axum, to whom the overthrow of the Ethiopian kings seems to have been due. The mounds of Meroë are as extensive as those of Memphis, and are covered with the same pottery as that discovered by McIver at Ibrum. At Messaurat en Naga I further found the rock tomb of King Sengawâtoh, 'priest of Thoth,' and to my great joy the key to, at any rate, a partial decipherment of the Ethiopian hieroglyphs."

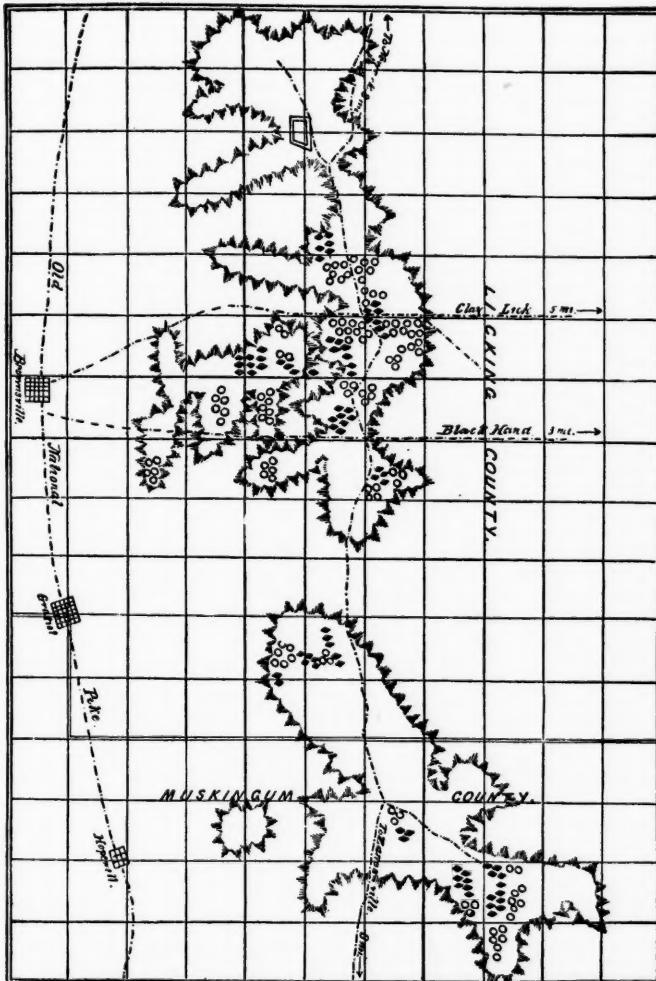
## THE GREAT INDIAN QUARRY OF OHIO

**F**LINT RIDGE in Ohio is the source from which has come the larger part of the material from which the Indians of the Ohio Valley manufactured their arrowheads and spearheads. Altogether it is one of the most interesting and instructive relics of the aborigines that is anywhere to be found. The Ridge is situated near the center of the state, about half way between Newark and Zanesville. It consists of a mass of variegated flint of subcarboniferous age, about 10 miles long and 1 mile wide, from which the softer strata on either side have been worn away by the slow process of sub-aerial erosion to a depth of 200 or 300 ft. But the general height is that of the original plain which has been dissected by the streams. This level is not far from 1,000 ft. above the sea.

Naturally such a deposit of flint does not furnish fertile soil, so that it is still uncultivated. But it has always supported a dense forest of trees, and now is thickly covered with second-growth timber and underbrush, making its exploration difficult. In fact, it has never been thoroughly explored. No excavations of any amount have been made in the pits from which the Indians removed their precious treasures of flint; or in the piles of debris that surround them. Important results are expected from the exploration which the State Archaeological Society plans to make in the near future.

The superficial facts, however, are startling in themselves, for this whole area of several square miles is completely honeycombed with pits dug down from the surface to a depth of from a few feet to 20 ft. There are literally tens of thousands of these depressions with their surrounding rims of useless debris thrown out about them. What little investigation has been made in these piles makes it clear that no manufacturing of implements was carried on there. The workable material was taken away to be made into the finished product elsewhere.

The extent of the work carried on is the most surprising thing about the place. Many centuries, or perhaps thousands of years, would probably be required to exhaust the field as thoroughly as it was done. Not that the flint was all exhausted, for that is not the case. So much remains that a railroad company has thought of purchasing the area to crush the material for ballast. But the Indian was limited in his means of quarrying and could not penetrate to a great depth. It will be interesting to learn what his quarrying tools really were.



FLINT RIDGE, LICKING COUNTY, OHIO

From *Fowke's Archaeological History of Ohio*

It will be interesting, also, to learn how widely this variety of flint was distributed by trade. Since we have found implements of obsidian from the Rocky Mountains and ornaments of mica from North Carolina in the mounds of Ohio, it is to be expected that some of these flints of the more attractive colors may have found their way to the most distant parts of the continent. The activity and enterprise of the Indian tribes have not been fully appreciated; especially in the light of their limited means of work and travel.

Oberlin, Ohio.

G. FREDERICK WRIGHT.

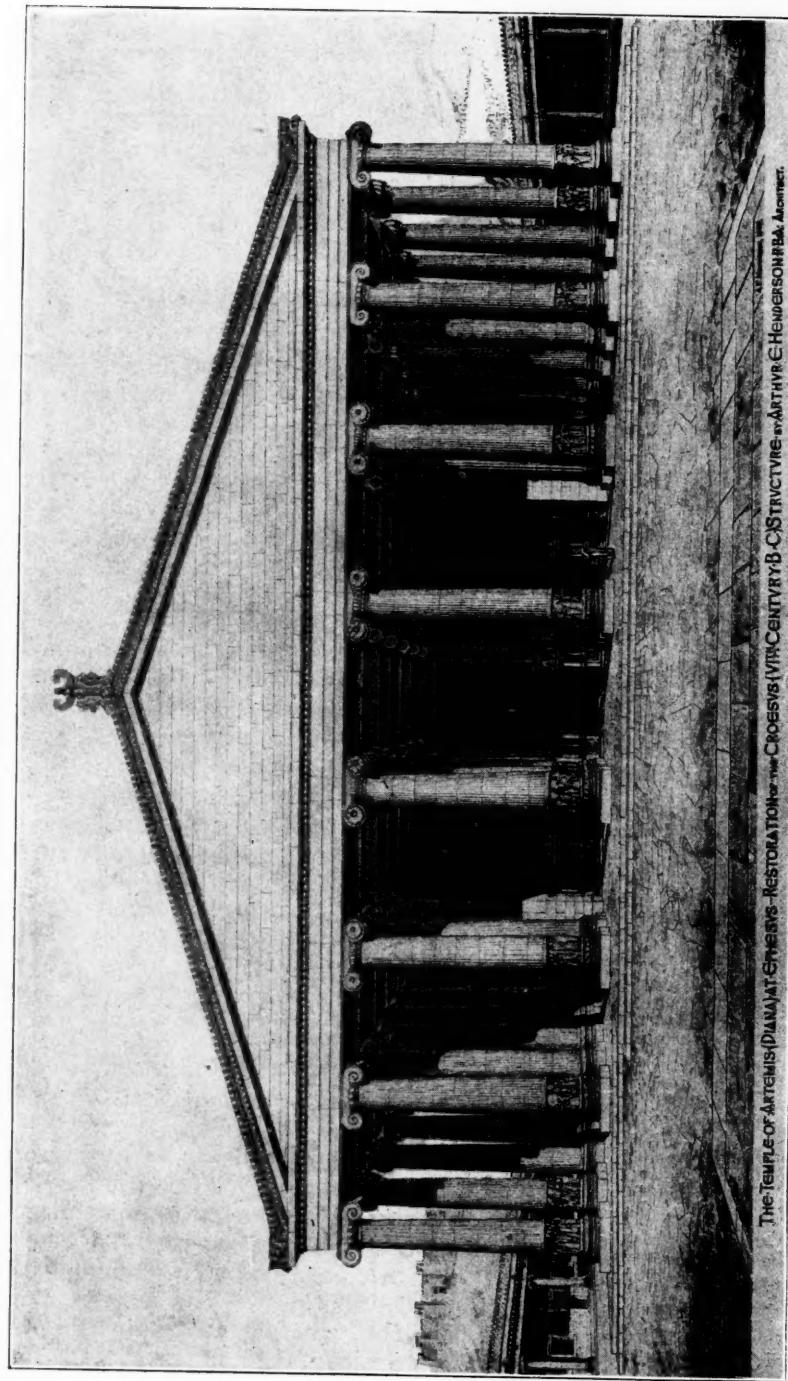


FIGURE I

## THE CROESUS (VI<sup>th</sup> CENTURY B. C.) TEMPLE OF ARTEMIS (DIANA) AT EPHESUS\*

IT IS my purpose in this paper to describe the actual remains found and the fragments remaining of the Croesus VI century B. C. Temple of Artemis at Ephesus, which were uncovered and surveyed during the British excavations at Ephesus, directed by Mr. D. G. Hogarth, in the autumn of 1904 and the spring of 1905, and to place before the meeting a suggested restoration.

Before I commenced the survey the late Doctor Murray, and after his death Dr. Cecil Smith, desired me to measure and examine carefully every marble fragment of the Croesus temple left in position, and this I believe has been carefully done, besides making full-size details of the architecture found. The Croesus pavement is about 6 meters (19 ft. 8 in.) below the general level of the fields. It is well shown in figure 2, taken before the primitive structures were uncovered, and looking in a southwesterly direction (the large pile of stones is a northeast column base, and the hut marks the situation of the southwest anta).

The excavations included two campaigns, viz., in the autumn of 1904 and the spring of 1905. Before the commencement of the spring campaign the excavations were flooded, so that they seemed almost in a hopeless state; but, by the aid of a powerful 12-in. centrifugal steam pump, belonging to the Aidin Railway Company, and by the supplementary use of a 3-in. hand pump, the water was kept sufficiently under control, but not without a liberal amount of hand bailing, which was always resorted to where explorations below the pavement level were taking place.

The Hellenistic first step and drain beneath the courtyard paving were traced for considerable distances on the north and east. They were found also on the south, but not at the west. Huge masses of Hellenistic piers to support the steps were also uncovered; these at their inner ends rested on the Croesus pavement, and at their outer united with a continuous foundation extending to the drain mentioned above.

The pockets between these piers were the only portions of the Temple area not covered by a continuous foundation. These were filled with débris from the Croesus temple. Other Hellenistic foundations were two masses for the peristyle columns, an inner and an outer; also foundations lined the south side of the Croesus south cella wall,

\*This paper was read by the author at a General Meeting of the Institute of British Architects and later published in the *Journal of the Royal Institute of British Architects* under date of Dec. 5, 1908. We republish this article in part, with the permission of the Director of the British Museum.

and large masses stood within the cella, greatly impeding the work of exploration. Nothing was found belonging to the Croesus temple beyond the inner faces of the Hellenistic foundation piers.

The remains which are still in position consist of almost the whole of the foundations, and patches of marble pavement. The steps and the foundations had been entirely cut away by the Hellenistic builders, excepting a small portion of foundation to the west of the perron, and the plinths of three columns, one of which has the lowest base still in position. Parts of the west and south walls with the southwest anta still remain, and also the eastern marble quoins to the central basis. Besides these, in the foundations of the cella were discovered what appeared to be a foundation for an inner colonnade.

Large continuous masses of concrete (which Wood considered to be the foundations of a Byzantine church) composed of fragments of the Croesus, the Hellenistic temples, and Roman bricks, just within the cella wall on all sides, extending both below and above the level of the Croesus pavement, added greatly to the difficulty of the exploration of the cella, more especially so as explosives could not be used. One such mass, however, was useful, because molded upon its surface was the inner face of the southeast angle of the cella wall, thus definitely giving the extent of the cella. This shows that the foundations of the Croesus temple were laid bare as early as late Roman or Byzantine times.

#### THE PRIMITIVE STRUCTURES

On removing portions of this concrete, and of the Hellenistic and Croesus foundations, remains of three primitive structures were disclosed.

The earliest structure, Temple A, was represented by a small central basis built of squared green schist (figure 3); the blocks were bedded upon one another and used as facing to a solid yellow limestone interior. It was among these small stones that the majority of the electrum treasure was found, and just outside the northern third of the western face the greater part of the ivory objects were discovered, now exhibited in the British Museum and the Imperial Ottoman Museum, Constantinople. The lowest courses of the foundations extended to about 1 meter 80 centimeters (5 ft. 11 in.) below the level of the Croesus pavement. Projecting westward from the basis and bonded into its foundations is a small T-shaped platform; joined to it further westward is another platform about the same size as the basis, both of yellow limestone.

The middle period, Temple B, entirely of yellow limestone, surrounds Temple A and thickens the basis to the east, north, and south. This structure had an outer wall on all four sides, but this has been greatly demolished by the laying of the Croesus foundations.

The last of these primitive structures, Temple C, again enclosed the basis and extended further westward. This also has an outer wall of much greater extent than that of the middle period. The inner



FIG. 2. EXCAVATIONS FROM THE NORTHEAST BEFORE THE PRIMITIVE STRUCTURES WERE UNCOVERED

*Courtesy of British Museum*

enclosing wall was ashlar-faced, only the first course remaining in places—and it was built upon large slabs extending the full width of the wall, and below these rough foundations.

The northern and southern walls generally measured 1 meter 93 centimeters (6 ft. 4 in.) in thickness, and the western was slightly thicker, viz., 2 meters 1 centimeter (6 ft. 7 in.). The lateral walls extended westward further than did the western wall, and give the appearance of a temple *in antis*. This feature could not be traced at the eastern end, although the eastern cross-wall was in position and in perfect preservation at the northeast inner, but broken away at the outer, angle. Another small foundation of this structure was discovered just within the foundations of the eastern cella wall of the Croesus temple.

It was extremely difficult to apportion all these different foundations and wallings on account of their fragmentary condition and the nature of the soil, for when the heavy masses of Croesus foundations were removed water would instantly spring; and although the pumping was sufficient for general purposes, the examination and measuring were most difficult and arduous, having to be done groping in slime, with the water running out from every crevasse, bubbling up from the virgin sand below, and men incessantly bailing.

## THE CROESUS TEMPLE (D)—GENERAL

In the course of the VI century B. C. the Ephesians determined to replace the small Artemision then existing by a new temple of much greater dimensions and splendor, by the architects Demetrius and Paeonius—with a platform considerably over four times the area of the old building. As a comparison, one may imagine the replacing of a Saxon edifice by a Norman cathedral.

The last primitive structure, Temple C, the architects of which were probably Chersiphron and Metagenes, I suggest, was used while the Croesus temple structure was being built around it, and was only destroyed when the work was well in hand to make way for the construction of the cella. To support this theory we found a conduit, 60 by 30 centimeters (2 ft. by 1 ft.) in width and height, passing through the center of the western cella wall a little more than a meter (3 ft. 3½ in.) below the pavement at the western portal. On the inner side it started clear of the western wall foundations, close to the western wall of the C structure. A little lower than its floor level and to the west it was traced beneath the foundations of the pronaos for a considerable distance westward. The primitive "Basis" was still used as the central point, but the axial direction was slightly readjusted to 11° 35' north of west and south of east, and was doubtless as near the true west-east direction as the architect could attain. Perhaps it was axial with the general direction of approach by sea or fixed by an astronomical observation.

The general dimensions of the remains *in situ* are: The length from east to west of the marble pavement remaining, 108 meters 83 centimeters (*circ.* 330 ft.); the total length from east to west, including the western perron (the platform at the western end), 117 meters 48 centimeters (384 ft.) the width from north to south, 55 meters 10 centimeters (180 ft.); the area covered, including the perron, approximately was about 6,211 square meters. I shall give the reconstructed dimensions later.

## FOUNDATIONS

Over all this area, wherever the foundations were removed, was found a bedding of white clay from 10 to 20 centimeters (4 to 8 in.) in thickness, and below this virgin river sand; but where older foundations occurred gravel had been laid on the clay bed to fill up holes, and the clay then spread to take the new foundations, all of which were of blue limestone quarried from Mount Prion hard by, with the exception of a few discarded marble paving-blocks.

The wall foundations were constructed before the other foundations; they spread out with footings to a depth of about 1½ meters (5 ft.) beneath the pavement floor. The cella wall was considerably larger (the north and south walls projected to embrace a pronaos of large extent and a posticum), and entirely enclosed the outer wall of

Temple C. The south cella wall measures 1 meter 92 centimeters (6 ft. 4 in.), and its lowest course of footing 5 meters 20 centimeters (17 ft. 1 in.) in diameter. These walls had 5 courses of foundations and were composed of fairly large stones, but with two thicknesses occasionally of small stones used as a course.

The foundation of the remainder of the structure was formed of 3 continuous layers of large stones to a depth of about a meter and a quarter (4 ft. 2 in.) below the pavement. A fragment of the foundation for the steps was found at the western end of the perron; the lowest bed was continued to carry the pavement of the courtyard.

There was a straight joint in the foundations within the cella, about 5 meters 97 centimeters (19 ft. 7 in.) distant north and south from the cella walls, and a little eastward of the basis, which had a facing inwards, and was composed of small coursed stones, about 60 to 70 centimeters (2 ft. to 2 ft. 4 in.) in thickness, and bonded into the large foundations at the rear. This probably supported an inner colonnade, or possibly it was a temporary facing to the foundations, allowing the central portion to be filled in later—shown in figure 4: it was built upon the lowest courses of Temple B, and the walling shown low down and parallel to the facing is a fragment of Temple C.

The central basis was free from the paving foundations—it rose to a sufficient height and doubtless was considered substantial enough to carry the cult statue.

Figure 5 is taken from the northeast and shows the marble quoins, yellow limestone courses between, and one stone of the topmost of the three foundation courses abutting against it to the north. No marble quoins were discovered at the western end, as the walling had been much disturbed, but Hellenistic foundation blocks were found placed upon it.

#### PAVING

The topmost course of foundations was very level on its upper surface, facilitating the laying of the marble floor, which naturally varied in thickness, averaging 20 centimeters (8 in.) in thickness, rough on the underside and three-fourths up the sides—the upper one-fourth worked to a true and even surface to fit its neighbor—the top surface was worked smooth. The slabs are of various shapes, having been cut, not to a pattern, but to the form which in each particular case entailed the least waste of material. Hardly any are even approximately square, though many have but one corner cut away. The majority of those which survived were of keystone shape. The polygonal slabs were, in most cases, the smaller, used for filling interstices, and even-shaped slabs occurred, with the inner angle filled with a small block.

Where columns were destined to stand, larger paving slabs than those ordinarily used were laid down. To this use of larger and therefore better slabs under the base plinths is due the fact that in all

but 4 cases the pavement which supported columns has been removed wholly by later builders, while much of the outer column slabs has been left in position. The position of the columns can be roughly distinguished by their gaps. No special foundations were put in under the columns, the usual 3 layers of foundation blocks being considered sufficient to support the weight. As will be noticed later, however, these have not always fulfilled the expectation. The pavement ran under all walls, the slabs being usually laid lengthwise, under the line of wall; but even there the arrangement was not very symmetrical, no effort being made to secure uniformity of dimension or parallelism of sides.

All the pavement surface would appear to have been left rough in the first place until the superstructures had been bedded upon it; then the exposed portions were leveled and worked to a smooth face. In certain places the faint dividing line between the rough and smooth indicates the position of a vanished superstructure. Three small T-shaped incisions occur in the pronaos pavement, nearly on a line with the third rank of columns from the western end—these were obviously sockets for marble or metal uprights.

From the levels taken of the surviving patches of pavement, it appears that the whole floor of the peristyle sloped slightly from the cella walls outward to the edges of the platform, and increasing to the extreme angles; but owing to the numerous settlements of the platform, caused first by the weight of the Croesus superstructure, and afterward by that of the increased height and weight of the Hellenistic temple, the original gradients can only be approximately correct. The slope from the cella wall to the outside edge of the platform works out to 15 centimeters (6 in.), with a further fall of 30 centimeters (1 ft.) at the 4 angles.

#### THE WALLS

The north wall has been entirely removed, but its inner line can be traced on certain surviving slabs of pavement.

The east wall has also perished, but its position is defined by a mass of concrete at the southeast angle, and a portion of its western foundations were uncovered in the axis of the temple.

The eastern extension walls and antæ have entirely disappeared, together with the majority of their foundations.

The south wall has left more traces, and a short length of it actually survives in position.

At a point about 35 meters (115 ft.) from the southeast angle is a portion of the plinth and 3 courses of the wall. Byzantine concrete abutted on the inner face, cementing it in position, and Hellenistic foundation blocks of blue limestone abutted against the outward face. Thus the whole width of the plinth course survived, and the facing blocks of the course above with a portion of the inside filling. The

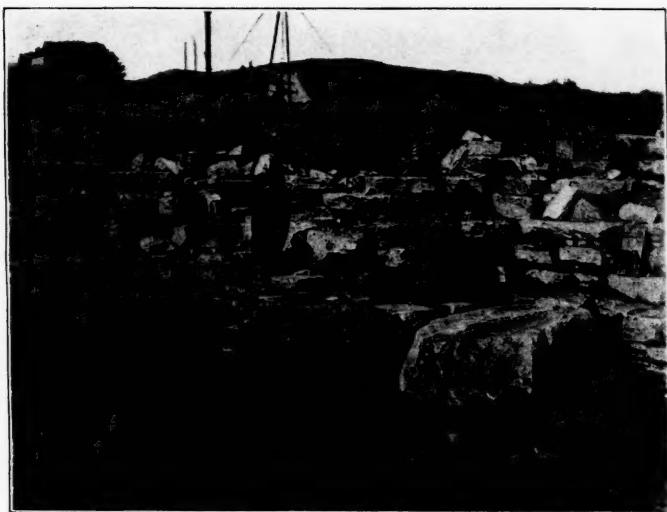


FIG. 4. FRAGMENT OF INNER ENCLOSURE ON S. W. (UNDER MAN'S FEET)  
SOUTH WALL IN THE BACKGROUND

*Courtesy of British Museum*



FIG. 3. CENTRAL BASIS FROM THE WEST. HALF EXCAVATED

*Courtesy of British Museum*

thickness of the wall was 1 meter 93 centimeters (6 ft. 4 in.), and the plinth 1 meter 98 centimeters (6 ft. 6 in.). The prolongation of the walls to the west of the western cross wall survives at the southwest anta, namely, that of the plinth course and one block of walling only. Hellenistic foundations encase this on 3 sides, and rise to a height of about 1 meter 92 centimeters (6 ft. 4 in.). A fragment of the west wall of the cella survives, between the western portal and the north wall. The southeastern corner marks the return for the doorway. Only the plinth course and one block of the superstructure remains.

The thickness of this wall is 2 meters 1 centimeter (6 ft. 7 $\frac{1}{4}$  in.), of the plinth 8 centimeters (3 in.). This excess in the thickness to the west of the lateral walls carries on the tradition of the preceding Temple C.

Presumably the reason for strengthening the west wall is to be found in the fact that it was interrupted by the great door, or that it rose higher and supported the main weight of the roof. It is, however, curious that, nevertheless, its lowest foundations are not so broad as those of the south wall. This portion of walling had settled very considerably, especially at its northern end—the gradient being as much as 15 centimeters (9 in.) in a length of 4 $\frac{1}{2}$  meters (14 ft. 9 in.).

#### REMAINS OF COLONNADE

Four portions of the colonnade of the peristyle remain—two inner and two outer. Of the inner row the plinth and lower base remain *in situ* of the fifth column from the eastern end of the northern rank. This is encased by foundations—mostly of marble, from the Croesus temple—of the Hellenistic temple, which carry the paving, plinth, and lower base of a Hellenistic column. A large fragment of corona and a small fragment of a capital were among the foundation blocks.

The third plinth of the inner rank in the south peristyle from the west end still survives, badly cut about and surrounded by Hellenistic foundations; the plinth is in two pieces, which were joined by doweled mortices.

Of the outer row only a half plinth of the third column, on the south side, from the west end remains. Presumably Croesus remains of the eleventh outer column of the south peristyle from the west end would be found if the Hellenistic foundations surrounding it were to be removed. It was upon this Hellenistic foundation that Wood found the fine base now in the British Museum. I found that the Croesus pavement upon which this foundation stands was very considerably out of level. The Hellenistic builders started to correct this, and even at the present time the top courses of this foundation were perfectly level, thus conclusively showing that the Croesus temple settled before the Hellenistic structure was superimposed.

## MARBLE AND COLORING

The marble used was quarried near Kos Bunar, about  $\frac{1}{2}$  miles (from the site) up the Cayster Valley, and is of a highly crystalline variety, white in color generally, but here and there slightly tinged with blue patches and veins. Where salts have affected inferior blocks the surface has disintegrated to the consistency of crystalline sand, and crumbles at a touch. The surfaces of the blocks which were not used for walling were brought to a smoothly rubbed finish, but not polished. The walling was hammer-finished and tooled at the edges, the arris often taken off. The bearing surfaces of column-drums were worked completely before being adjusted, and not ground against



FIG. 5. BASIS FROM THE N. E. MARBLE QUOIN OF CROESUS TEMPLE  
IN FOREGROUND      *Courtesy of British Museum*

each other when in position. These bearing surfaces retain traces of a red mastic. This coloring would not have been visible when in position; therefore it must have been applied when the masons wished to test the smoothness of the surfaces.

On other architectural fragments traces of coloring intended to be decorative can be detected. A white mastic seems to have been used in some cases as a ground, the marble being slightly absorbent. The colors applied thereon were a pure rich blue (observed on surfaces which were newly exposed and therefore damp), and more frequently a rich red. Several fragments of dart-and-leaf molding showed faded yellow and brown, which may be decayed remains of bright yellow and dark red.

## ARCHITECTURAL DETAILS FOUND

**BASES.**—As was mentioned before, within the northeast pile of Hellenistic foundations is a circular drum-shaped base (three orders of double astragals between two filleted scotias) placed above a square plinth. The plinth is about 1 ft. in height and projected slightly from the base above. Comparing this plinth with the two others *in situ*, I have come to the conclusion that the inner rank had only a slight projection from the circular base, and the outer rank had rather more of a projection. Numerous fragments of varieties of molded torus or upper base were found, and appear to have been always bedded upon the lower base. The most common type is the parabolic torus, which is enriched by shallow, narrow flutings separated by small V-shaped grooves. Another very attractive torus has the upper part of its surface treated in a different manner from the lower. The upper is light and graceful, while the lower is massive and substantial. This effect is produced by the lower portion having convex reedings instead of flutings. Three varieties of filleted leaf-and-dart torus constitute yet another addition to the known bases.

**SHAFTS.**—Twenty fragments of shafts were studied and plotted; 14 were found to give 44 flutings to the circumference, 3 gave 40 flutings, and 3 gave 24 narrow and 24 wide flutings. Those giving 40 were of a comparatively narrow diameter, and I consider they belonged to the inner rank. The flutings are very shallow, and of elliptical section: they show a sharp arris and are not separated by fillets. Besides several in the British Museum, two good fragments of the uppermost drums were studied. One example has a large astragal and the other a small one, both enriched by pearl and double reel. The apophyses in all cases were different in curvature, and the necking from which the enriched astragal springs is, in some cases, perpendicular, but more often battering outward or cut inward.

**CAPITALS.**—Several varieties of abacus were found, always enriched either by a filleted leaf and dart or egg and dart. There were at least 3 distinct varieties of leaf and dart. The leaf in every case is divided into two halves by an arris, and each side is concave in section and very similar to the torus bases. The fillet binding the leaf is generally shield shape, sometimes curving outward and sometimes inward. In two fragments the leaf and dart both run down and die into the horizontal astragal above the saddle uniting the volutes. The egg-and-dart designs also vary. The egg portion really is not of that shape. These eggs are bounded by astragals which abut one against another for about two-thirds of their depth. The astragals afterward form a loop supporting the egg. The top of the egg is cut off flat, shortly after it begins to recede inward.

A fine fragment of echinus was found embedded in one of the pockets between the Hellenistic piers on the south side. It is broken off right through the center line, and it shows 3 complete eggs to the

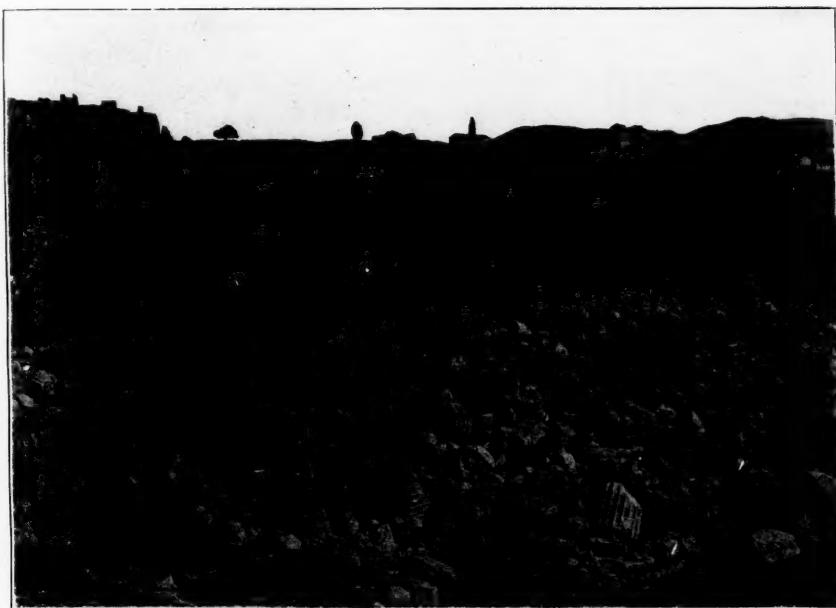


FIG. 6. GENERAL VIEW FROM S. W., SHOWING BYZANTINE CASTLE, RUINS OF CATHEDRAL OF ST. JOHN ON THE HILL, AND MOSQUE OF ISA BEY

*Courtesy of British Museum*

left hand, the third egg being partly covered by the palmette springing from the junction of the roll of the volute, and the roll uniting the two volutes immediately above the echinus.

The astragals of the pulvinars, however, do not always spring from the echinus, but loop round one toward another, and small darts spring from the diverging point. When the fragments of the volutes were put together it was found that a true unwinding proportional spiral, easily set out, was the result.

ENTABLATURE.—Nothing that could have rested directly on the capitals, such as even a fragment of architrave, was found, but 3 fragments of continuous egg-and-dart pattern were studied, which look very much like bed-molds of a cornice. One was built into a Turkish tomb near the temple site. One of a large size in the Museum might possibly have been run round the cella wall.

A large block of cornice corona was found built into the foundation of the northeast Hellenistic column foundation. The hollowing out of the soffit was continuous. Another small fragment was found, as far as it went, to correspond with the large fragment. I took a paper mold of the bed-mold built into the mosque tomb, and a casting has been made from this and also a replica in plaster of the corona. These have now been cast and placed in juxtaposition. Portions of the sculptured cymatium gutter came to light, and several fragments of lion-headed gargoyles. Both the face of the corona and the cyma-

tium gutter had a batter forward. A portion of what might be the tympanum (unsculptured) gave the angle of the pediment.

ROOF.—The terra-cotta fragments of tiles found on the site came from two distinct strata. Those found in the pockets of the Hellenistic piers were of the Croesus periods. No one completed length or width came to light, but only small fragments; these comprised top and bottom corners and sides, besides portions of the cover tiles. This pattern of tiling is evidently suited to a low-pitched roof, and it would bear comparison with many of the "one-thickness" tile designs of the present time. The marble parapet must have protected the lower part of the roof from the sudden storms which sweep down from the mountains in the locality.

Such was the material found for the study of the structure commenced about 550 B. C., dedicated 430 B. C., and destroyed by fire in 356 B. C.

The cymatium gutter has already been mentioned. This sculptured parapet is the feature of the entablature—it protected the roof from storms, and gave protection to those who of necessity had to repair the tiling. In the restoration the lion-headed gargoyle have been so distributed as to throw the rain-water just clear of the columns, and allow sufficient distance between their outflows for access to the peristyle. If this parapet were continued raking up the pediment it would have been extremely unsightly from the rear and, moreover, would have no reason for its existence. I have therefore made it return at the angles for a short distance until the roof behind rises to its level; thereafter it rises as the cymatium to the tympanum cornice. I have inferred the angle of the pediment from a small fragment of marble which might be tympanum facing.

The roof of the temple is shown with tiling, inferred from the portions found, and I suggest that timber was used for all construction above the corona member. The cella walls may have continued upward to support the roof timbers.

Not having any actual evidence for the height of the architrave from the pavement, I have drawn an inference from this dimension and made the height of the colonnades in proportion to their length as one to four.

In support of this somewhat low colonnade I may remark that if greater height were given, the sculptures on the cymatium gutter would not have been clearly seen. The height of the entablature is shown as one-fourth of the height of the colonnade, namely, 3 meters .07 centimeter (10 ft. 1 in.). This dimension is divided equally between the architrave and the superior members. The whole height of the temple, from the pavement to the summit of the sculpture crowning the pediment, I show as 24 meters 56 centimeters (80 ft. 7 in.), namely, half as much as the total width of the peristyle at the base of the shafts.

ARTHUR E. HENDERSON.

London, England.



WEDGWOOD VASE OF THE CAMPAGNA OR BORGHESE FORM

### THE WEDGWOOD VASE\*

THE Art Institute of Chicago has come into the possession of a stately Wedgwood vase, which the annexed engraving reproduces, by the generosity of Mr. James Viles, of Lake Forest, Ill. The vase is of the famous porcelainous body to which Josiah Wedgwood, its inventor, gave the name of jasper. The great English potter was engaged with this improvement upon the ordinary white biscuit from 1770 on, and was able to employ it for the grounds of his white appliques, or cameo designs, in four varieties: body-stain, water-colored, enamel-colored, and dipped. The colorings of jasper ware are blue in several shades, lilac, pink, yellow, sage and olive green, and black. The present example is of the dipped black jasper, adorned with white bas-reliefs, its height being 20 in.

\*Notes on a Wedgwood Vase presented to the Art Institute of Chicago by James Viles, Esq.

The new material possessed three faculties of great value. Parts made separate adhered firmly to one another; the vitrified carbonate and sulphate of baryta compound absorbed metallic oxide colors readily, as no other hard pastes will; finally, the jasper body could be cut and tooled on the lapidary's wheel. The principal engraver and polisher employed at the Etruria works to finish the best pieces was Robert Pollard.

Wedgwood's remarkable imitations of antique cameos are first mentioned in a trade catalogue of 1772. Their manufacture culminated about 1777, and led up to that of jasper hollow-ware. In 1786, the Duke of Portland allowed the Staffordshire potter to attempt a reproduction of the famous Barberini-Portland Vase, which Sir William Hamilton had brought to England. Webber, one of Josiah Wedgwood's modelers, completed the pattern in the spring or summer of the following year, before his journey to Rome. So Rhead, in *Staffordshire Pots and Potters*; Miss Meteyard places its completion after Webber's stay in Rome; the first copy was not published until 1790. A subscription was opened for 25 copies of it at 50 guineas each, of which, indeed, only 20 were covered before its production. Josiah Wedgwood, jr., was still doing trials at the Etruria works for "Barberini black" in May, 1790, when to redip a first coat of blue and black in pure black was accepted as the best method. The first copy was exhibited at London and all over Europe in 1790. About 50 copies of the Portland amphora were eventually turned out, in ground colors to suit the taste of customers. Of this 50, Miss Meteyard locates 15. The popularity of these reproductions was, of course, largely due to the celebrity and to the presence in London of the antique cut-glass original. It is a matter of record, however, that 5 out of 6 early copies were spoiled in the making; this circumstance gives a notion of the technical difficulties encountered, and of Wedgwood's resolution to sign no inferior specimens.

Undeterred by these failures, and by the poor commercial success of the Portland vase, which was costing him over £5,000 to produce, Wedgwood multiplied his models with energy. In a letter to Lord Auckland, British Ambassador at Madrid, dated 1788, he says: "I employ several modelers constantly in Rome" (Miss Meteyard's *Life of Josiah Wedgwood*, II, p. 572). John Flaxman, whom Josiah's first partner, Bentley, had discovered in 1775, and his wife went to Rome in 1787, with advances from Mr. Wedgwood. Flaxman superintended the work of the men coincidentally employed there, Webber, Dalmazzoni, young John Wedgwood, Angelini, Cades, Devaere, Fratoddi, Hackwood, Mangiarotti, Pacetti, and others. Which of these is the copyist, or rather the adapter of the famous Borghese Vase, as that antique marble appears conformed to the exigencies of the ceramic material in the extant copies of it? Of such we can at present locate only four, a London one at the Victoria and Albert Museum; another (19½ in. high.) in the possession of

the late D. C. Marjoribanks, Esq., M. P. (compare the context to Meteyard, *Life of Josiah Wedgwood*, figure 110, where its relief decoration is misdescribed as Flaxman's Apollo and the Muses); third, number 263 in the Wedgwood Museum, height 22 in.; and fourth, the one brought to Chicago by Mr. Viles. The Wedgwood Museum at Etruria, Staffordshire, where the firm continues active under the name Josiah Wedgwood & Sons, Limited, also exhibits a reduction, 10 $\frac{3}{8}$  in. high, of the Borghese form, which bears the number 144. Mr. Frederick Rathbone, of London, tells Mr. Viles he remembers having three specimens of the form in blue, one in green, and one in pink, but none black and white.

Mr. Viles, the late owner of the Chicago specimen, was informed that a Roman artist had modeled the pattern for it from the Borghese Vase—a large antique marble which is now preserved in the Louvre Museum, Paris—under Flaxman's direction. This would seem to indicate Webber or Pacetti as the probable artist. But a letter from John Flaxman himself to Josiah's partner, Mr. Byerley, dated Rome, March 15, 1788, credits the sculptor's work definitely to his friend and studio-mate, Devaere, who became known later, at Etruria, where he succeeded Webber, as John De Vere. He seems to have been a Frenchman. In Rome he used Flaxman's atelier on the Via Felice, where his modeling was always open to the suggestions and to the finishing touches of the master sculptor. Flaxman writes: "When you write to Mr. Wedgwood you will be so kind to inform him Mr. Devaere has been at work with the utmost diligence ever since he has been here on the bas-relief of the Borghese Vase, in which he has succeeded very well, but it will take him some weeks to finish, and after he has done I also shall have something to do to it. Mr. Wedgwood will easily conceive, as this is new work to Mr. D., he must needs be slow at first, especially as he takes so much pains. As a proof he follows his studies well, he has already gained the Pope's first silver medal for a figure modeled at night in the Roman Academy." (Meteyard, *Life of Josiah Wedgwood*, vol. II, p. 588). Devaere must have been acquainted with Piranesi's two etchings of the ancient marble, and of its unfolded girdle of bas-relief, Plates 83 and 84 of his *Coupes, Vases, Candélabres*. It is indeed probable that the black ground of the sculptures, in the latter engraving, directed Wedgwood's or Webber's attention to Prince Borghese's sculptured crater as the best model for another cameo vase in Barberini black jasper. The ceramic copy reproduces the Bacchus and Poetry, the tipsy Silenus, and the merry fauns and bacchantes of the original, late Greek marble with accurate fidelity.

The body of the Viles vase was executed in three pieces, with a twist of ribbon interposed between the figures and the vine wreath above them. This was introduced to mask the junction of the upper two sections of the ceramic copy, and is absent in the Paris marble. In the place of the finely restored handles of the Wedgwood vase, the

marble has only four satyr heads. The plinth and foot were also done separate and stuck together. Body and foot are joined by bolting. The conical lip which receives the cover, and the gracefully decorated cover itself are another free addition to the antique pattern. The point of a tool has scarred the jasper on one side of the ascending lip, under the black dip. Parts of the white relief work are gobbed. The major part of it is cleanly and sharply molded, as if from a wheel-tooled model, and has also been directly retooled on the wheel itself. This observation agrees with the usual conditions of Josiah Wedgwood's own output.

The type impression mark, on the white body under the plinth, is <sup>T</sup>WEDGWOOD. It sheds little light on the date of manufacture, inasmuch as the firm rarely departed from this form, and returned to it regularly when it did. Josiah Wedgwood himself used the letter "T" on trial pieces to signify top of the biscuit oven.

In a letter from the Wedgwood Company, which Mr. Viles has kindly communicated, under date of June 28, they say that they have no record of the number of these vases made. "There are, however, very few to be seen in the public museums and private collections, so that they are doubtless very rare."

ALFRED EMERSON.

Chicago, June 30, 1909.



GIFT TO THE ROMAN MUNICIPALITY.—"The German Archaeological Institute here [Rome] has presented to the Roman municipality the only existing fragment of one of the bases of the columns of the temple of Jupiter Capitolinus."

ISOLATION OF THE BATHS OF DIOCLETIAN.—It is proposed to isolate the Baths of Diocletian by the removal of the shops now at the base of this ancient building. The cost is estimated at nearly \$90,000.

EXCAVATIONS AT ADRIA, ITALY.—The excavation of Adria, Italy, is said to have been begun, with prospect of much enlightenment upon the nature of the Etruscan civilization. The town was at one time a seaport, but now the site is 17 miles from the coast.

LOCATION OF HOMERIC ITHACA.—A. E. H. Goekoop differs from Doctor Dörpfeld in the location of the Homeric Ithaca. He contends that it was located in southern Cephallenia. An examination of all the passages in the *Illiad* and *Odessey* referring to Ithaca is the basis of his theory.

## BOOK REVIEWS

### SOCIOLOGY, MAGIC, AND RELIGION OF THE EASTERN ISLANDERS<sup>1</sup>

**V**OLUME VI of the *Reports of the Cambridge Anthropological Expedition to Torres Straits* is the first of this series to appear. This Report deals with the sociology, magic, and religion of the Eastern Islanders, and comprises reports by A. C. Haddon, W. H. R. Rivers, A. Wilkin, and C. S. Myers. The first chapter is devoted to folk-tales, of which 23 are given. These cover a wide range of nature, culture, and religious myths.

In the next three chapters Mr. Rivers takes up genealogies, kinships, and names. The chief difficulty in collecting genealogical data was the custom of adoption and the use of different names for the same individual. In spite of these difficulties, Mr. Rivers was surprised at the agreement which he found in the genealogies as obtained by him from different sources.

Chapters on various ceremonies and customs follow, the most interesting of which are those on *Magic* and *Religion*, factors which are closely related and enter into everyday life. In their omens there are some with which we are familiar, as: "If a man sneezes, *siau*, it is a sign that some one has mentioned his name, and he immediately cracks the joints of each thumb by closing on it the fingers of that hand." Shooting stars are omens and different birds foretell events; the kingfisher can see ghosts and warn people of their approach. Other birds tell when the yams are ready to eat, and when turtles will be numerous in deep water.

The principal religious cult is that of Bomai and Malu, which was introduced from the western islands. The mythical beings are always unmarried and of supernatural birth. If any of the natives, when recounting mythical adventures and stories, are asked if the hero were married, they would reply: "Certainly not! He comes in his own manner without a mother or a father." Mr. Haddon concludes the chapters on religion and mythical beings by stating that they "did not discover in Torres Straits anything like an All-Father or Supreme Being."

<sup>1</sup>*Reports of the Cambridge Anthropological Expedition to Torres Straits. Vol. VI. Sociology, Magic, and Religion of the Eastern Islanders*, pp. xx, 316, xxx plates. Cambridge; at the University Press. New York, G. P. Putnam's Sons. 1908.

### THE ACROPOLIS OF ATHENS<sup>2</sup>

**S**O MUCH has been written on the Acropolis of Athens, and so many historical and archæological questions raised, some of which may never be satisfactorily answered, that a concise statement of our present knowledge, such as the recent volume on *The Acropolis* by Prof. M. L. D'Ooge, is very welcome. In the preface the author states that: "The present volume is an attempt to give a summary of the most important contributions to this history and to state the results of personal study of this site and of the ruins upon it."

The arrangement of material is mainly historical, beginning with the caves and grottoes in the sides of the Acropolis to which mythological legends have been attached; its history and development is carried down to the bombardment in 1687 and the latest excavations by the Greek Archæological Society.

The book is interesting for the general public, but references, appendices, and a "Select Bibliography" are added for the use of special students. Profuse illustrations and diagrams make it exceedingly valuable and interesting.



### GREEK ARCHITECTURE<sup>3</sup>

**A**VERY comprehensive although short work on *Greek Architecture* has been prepared by Prof. Allan Marquand, Ph.D., L.H.D., of Princeton University, and forms one of the volumes in the series of *Handbooks of Archaeology and Antiquities* being published by the Macmillan Company. The author traces the development of Greek architecture from earliest times, considering not only the architectural forms, proportions, and composition, but also the materials used, the methods of construction, and the decoration. The multitude of illustrations, about 400, from drawings and photographs, add greatly to the value of the book. The author has been careful to explain the technical terms which are used of necessity, so that the text is easily within the comprehension of those who are not professional architects.

Doctor Marquand is to be complimented for preparing a work which so well fulfills the purpose of a "handbook" and is of such value as a book of reference.

<sup>2</sup>*The Acropolis of Athens*. By Martin L. D'Ooge, Professor of the Greek Language and Literature in the University of Michigan; pp. xx, 405. Fully illustrated. \$4 net. New York: Macmillan Company. 1908.

<sup>3</sup>*Greek Architecture*. By Allan Marquand, Ph.D., L.H.D.; pp. x, 425. Fully illustrated. \$2.25 net. The Macmillan Co., New York. 1909.

## EDITORIAL NOTES

EXPEDITION TO CENTRAL AMERICA.—Among the expeditions of the School of American Archaeology for this year is one to Central America, under the auspices of the St. Louis society, which will start on the 15th of September and remain in the field until about the end of the year.

TO REPAIR THE OLD PALACE, SANTA FE.—No actual work has been done as yet on repairing the Old Palace and fitting it up for the use of the School of American Archaeology, for the appropriations are not available until December 1. All the preliminary arrangements, however, are being attended to, so that there may be no delay in the winter.

SARCOPHAGUS FOUND AT TARANTO, ITALY.—In the course of excavations at Taranto, Italy, a sarcophagus containing two intact bodies of the IV century A. D. was found recently. There were also "many valuable Ionic and Corinthian vases, sepulchral furniture, and a curious terra-cotta group representing Cupid kneeling on the shoulder of Venus."

PREHISTORIC GERMAN CEMETERY.—A prehistoric German cemetery has been discovered at Kessenick, near Maeseyck, at a depth of 30 ft. Many skeletons were found in urns. While the urns are of various shapes, the decorations indicate German origin. Some years ago, a Roman cemetery was discovered near the same place.

NEW HISTORICAL MUSEUM AT FLORENCE.—An historical and topographical museum has been founded at Florence. There are 14 rooms, containing a collection of pictures, photographs, and prints of old Florence and its festivals. Among the photographs are 28 taken by an Englishman, G. Brampton Philpot, in 1859, before the destruction of the city walls.

RELICS OF THE STONE AGE IN MEXICO.—It is reported that Prof. Jorge Engerrand and Mr. Fernando Urbina, who were sent from Mexico City on an archaeological expedition to the woods of Chiapas, made interesting discoveries early in the year. Aside from fossils of the Pliocene and Miocene periods, they found many relics of man in the stone age. At some distance from the town of Concepcion, an extensive deposit of weapons was found.

ANCIENT TOYS IN THE BRITISH MUSEUM.—One of the most interesting exhibits in the British Museum is a case containing ancient toys. Among them are a chariot with two prancing horses, a leaden horseman, a fox terrier with a collar and a long tail; a monkey eating a bun, and a doll's chair and sofa. There are also many mugs and dolls; many of them are jointed and carved. But, best of all, is a faded rag doll.

NEED OF FUNDS BY THE NEW MEXICO HISTORICAL SOCIETY.—The New Mexico Historical Society makes an appeal for funds to purchase a collection of official papers now in the hands of a private collector. They illustrate the Mexican era, especially from 1821 to 1846. The society is particularly desirous of securing these, as most of the archives of the territory have been taken to Washington.

ORIGIN OF THE IRISH HORSE.—Dr. R. F. Scharff contends that the Irish horse was of Libyan origin. Not long ago Mr. George Coffey obtained the most complete remains of an ancient horse yet discovered in Ireland. The human implements and weapons found with them in the Craigywarren Crannog, County Antrim, indicate that the cranpog was inhabited early in Christian times. The horse remains strongly resemble the Arab type of horse.

REMOVAL OF OBELISK TO CAIRO.—It is reported that Mr. T. C. Penfield, former United States representative in Egypt, proposes to transport the obelisk of Rameses the Great, now at the Temple of Luxor, to Cairo. He justly feels that it is not fair when Rome, Paris, London, and New York have examples of the obelisk, for Cairo, the Egyptian capital, not to have one. He plans to do this at his own expense, the obelisk to be placed at any point in Cairo that may be designated by the government.

GERMAN EXCAVATIONS NEAR MILETUS.—Reports from Berlin tell of progress in the excavation of the temple of Apollo, near Miletus, under the direction of Doctor Wiegand. The entablature and columns of the northeast corner were found in the position in which the earthquake which destroyed the building threw them. The frieze is adorned with carved Medusa heads, each more than 3 ft. high. Baths and a Roman temple dedicated to Egyptian gods were also found. A bust of Helios-Serapis was also discovered.

PALÆOLITHIC IMPLEMENT FOUND NEAR THE BRITISH MUSEUM.—There has recently come to the notice of Mr. Worthington Smith a palæolithic implement found in 1902 in the course of repairing a drain not far from the British Museum. It was found at a depth of 10 or 12 ft. "It is somewhat abraded,

blackish, clouded livid, and lustrous all over. It agrees well with the famous Gray's Inn implement found in the XVII century." An oval flint pebble forms part of the base, evidently left by the clever flaking of the maker.

ORIGIN OF THE IONIC FRIEZE.—H. Thiersch believes with Birt that the Ionic frieze developed from the painted and sculptured bands of figures on Egyptian walls. "It was not an original part of the Ionic entablature, but was first used in Asia Minor to decorate a bare wall. This was at first its object in Greece, but the earliest examples, the Parthenon and Phigalia friezes, were not effectively placed. On the Erechtheum and on the Nike temple the case was different, and this use of the frieze was afterward carried back to Asia Minor."

USE OF ANCIENT LAMPS.—M. Ringelmann has been carrying on experiments in the use of ancient lamps. Three Punic lamps from the VII, VI, and IV centuries B. C. were used with olive oil. Wicks of pith, goat, sheep, and dromedary hair, as well as linen, were tried. The linen wicks were the only satisfactory ones. They must be small, however, to avoid smoke. With a wick 3 mm. in diameter composed of 12 linen threads, he obtained a flame 30 to 35 mm. high and 6 to 8 mm. thick, provided salt was added to the oil. There was no smoke, but there was some odor.

SIGNIFICANCE OF SCRATCHES ON FLINT IMPLEMENTS.—At a meeting of the Prehistoric Society of East Anglia [England] in March, Doctor Sturge gave an address on the *Significance of Scratches on Humanly-worked Flints*. He regards such scratches as of great importance in the study of Pleistocene geology, especially when the hardness of undecomposed flint is taken into consideration. He declares that no satisfactory explanation except ice action can be found, but urges care in the examination of the facts. He believes that the presence of these scratches on the hard, lustrous surfaces of fine chalcedonic flint may give the clue to geologic time.

COMPOSITION OF FATTY MATTER IN MUMMIES.—Chemical analysis of the fatty matter extracted from Coptic mummies dating from 500 B. C. showed the fat to be largely oleic acid, but with no trace of any volatile acid. Egyptian mummies from 1500 B. C. contained volatile acids of the fatty series in the form of soda salts found mainly with the "natron" filling the internal cavities of the mummies. Natron is a mineral consisting of sodium carbonate, sodium sulphate, sodium chloride and calcium carbonate. The volatile acids could not have come from the butter and grease used in embalming, but must have been derived from the decomposition of the tissues of the body, fixed by combination with the natron.

REMAINS OF MAMMOTH.—“Remains of a mammoth have been found at Selsey Bill [England], below high-water mark, embedded in a fresh-water deposit of red clay, which is usually thickly covered with shingle. The bones were scattered and broken, but the molar teeth of both jaws were well preserved, and indicate that the animal was an ordinary mammoth, though not fully grown. Several hundredweight of bones were removed. Some of the teeth weighed from 6 lbs. to 8 lbs. each.”

NEW EXPLANATION OF THE “HADES RELIEF.”—Dr. Karl Frank offers a new explanation of the Babylonian bronze plaque called the “Hades Relief” (see illustration on p. 171, RECORDS OF THE PAST, Vol. III, 1904), which has usually been interpreted as descriptive of the soul’s descent to the underworld. He considers it a talisman made to protect a patient against the fever demon, Labartu. There are 4 divisions on the tablet; the top line gives the symbols of a number of gods; the next row shows 7 demons fighting, probably arrayed against the fever demon pictured in the lowest division; in the third section is the sick man, with hands uplifted in prayer, accompanied by two men in fishskins; the lowest division shows Labartu on an ass in a boat, departing from the sick man.

PREHISTORIC COPPER MINE IN ALASKA.—On Latouche Island, Alaska, is a copper mine called Big Bonanza. Aborigines were evidently acquainted with this ore deposit, for several wheelbarrow loads of stone hammers were discovered at the base of the cliff in which the deposit outcrops. The hammers are notched for the accommodation of handles, but no handles were found. Many of the hammers were broken by use; probably they had been used to pound the native copper out of the crevices in the rock. The identity of these ancient miners is unknown, but evidently they worked long ago, for the handles have been completely decomposed and the hammers buried in the soil. Although the present Indians knew the Big Bonanza outcrop, they did not understand it as valuable for metal. They used pieces of the ore merely to produce a black stain.

HEAD OF HERACLES IN PHILADELPHIA.—In a private collection in Philadelphia is a head of Heracles said to have been found at Sparta in 1908. The rear half is missing. The story is that it was found built into a wall, face inward. The weathered condition of the broken portion tends to confirm this story.

The head is of Pentelic marble, 9 1-3 in. high. “It represents the god as beardless, with the scalp of the lion drawn over the top of his head so that the muzzle and teeth of the beast come down over the forehead.” The characteristics of the face are very marked, and are so similar to those of the male heads attributed to Scopas on the basis of the two heads from the pediments of the temple of Athena

Alea, discovered at Tegea in 1879, that this head may be attributed to Scopas or to some Greek sculptor dominated by his influence.

WORK OF FELLOWS AND ASSOCIATES OF THE SCHOOL OF AMERICAN ARCHÆOLOGY.—“Mr. Sylvanus G. Morley, Central American Fellow, began in January the study of the orientation of Maya temples. Mr. Morley is spending the first part of the year in the field in Yucatan and, at last reports, had finished his field observations upon more than 40 buildings.

“Through the generosity of Mrs. John Hays Hammond, the School has been enabled to engage Adolph F. Bandelier, the historian and archæologist, as a research associate for 1909-10. Mr. Bandelier’s immediate work will be the preparation for publication of unpublished historical and archæological notes on the Southwest, especially the Rio Grande Valley.

“Since June, 1908, Mr. John P. Harrington has been working, as a volunteer assistant, on the myths and languages of the Tewa of the Rio Grande Valley. He is still engaged in working up the results of the field season of 1908, together with the linguistic material from certain Rio Grande Pueblos in the possession of the Bureau of American Ethnology.” [Bulletin No. 2, School of American Archaeology.]

KNAP HILL CAMP, ENGLAND.—In *Man* for April, Mrs. M. E. Cunnington reports an interesting feature in the entrenchments known as Knap Hill Camp, in Wiltshire. On one side the hill is so steep as to need no artificial defenses. On the other side is an entrenchment consisting of a single rampart and ditch.

The ditch has become silted up level, and there are 6 openings through the rampart. It seems from excavations that these gaps are not the result of wear or any accidental circumstance, for outside of each gap, and corresponding to it, a solid gangway of unexcavated ground was left. Each of these causeways is 18 ft. wide, but the sections of wall vary in length from 42 ft. to 122 ft.

Some have explained these gaps by supposing that the works were never finished. Mr. Cunnington advances the theory that the solid causeways were left as platforms from which to defend the walls. No part of any section of the wall was out of reach of missiles thrown from some one of the causeways. Hence, by making use of these platforms, the defenders could prevent the scaling of the walls.

“Flint flakes and rude pottery have been found on the floor of the ditch, and it is believed that the camp is of early date, that it belongs to the bronze, or even to the late neolithic period.”

BIRD-STONES IN WISCONSIN.—The January-February issue of the *Wisconsin Archeologist* is devoted to a description of the bird-stones of Wisconsin, by Charles E. Brown. These stones vary in shape from an almost featureless bar of stone to more realistic

forms, with eyes and tail well differentiated. Their exact use is unknown, but without doubt they had some ceremonial significance. Evidently, they were always handled with great care, for few broken or unfinished specimens have been found.

There are at present 54 specimens known in Wisconsin, most of them in public museums or in notable private collections. The material is usually either plain or banded slate, though soapstone and sandstone also appear, as well as some harder rocks. Most of the specimens reported were found in the eastern and southern part of the state. Thirty are surface finds, found during the cultivation of aboriginal village sites or other places where they had been left by their owners. Four accompanied burials. None of these seem to have accompanied mound interments. With one burial was a flint drill or perforator,  $4\frac{1}{2}$  in. long. With another were several articles of native copper.

"It is the author's belief that bird-stones were introduced into Wisconsin from the Ohio region, where objects of this class appear to be native, and are far more abundant. Their introduction came about either through the commerce which existed between the inhabitants of the two regions, or through tribal migrations. The area of their distribution in Wisconsin lies directly along a principal route of aboriginal movement. Their comparatively small number, and the fact that of the specimens found nearly half are made of Huronian or striped slate, a material which does not occur in southern Wisconsin, strengthens the belief that they are imports. If any of those described as made of other materials are the productions of native artisans, it is probable that their form was suggested by those procured in trade."

There is no mention in early Wisconsin history of the use of bird-stones in the religious or other observances of the local tribes. Although there is as yet a lack of local data bearing upon the subject, the belief exists that their use continued into this period.

ISAIAH'S KNOWLEDGE OF THE SUDAN.—Professor Sayce has recently spent some time in the Sudan on the White Nile, and returns with great respect for the geographical knowledge which Isaiah possessed. That region is covered with swamps called the "sudd." There is a dense growth of papyrus, sword grass and a plant with yellow blossoms, known as "ambach," all of which reach a height of 15 ft. in places. Much of the vegetation grows on cakes floating on the series of lakes through which the White Nile forces its way. Many poisonous insects make their home there, but little other animal life is present. On spots where the mud rises above the water level, the Dinka and Shilluk negroes build their huts of thatch. These negroes are the poorer relatives of the surrounding tribes. They are tall and smooth faced. They are lazy, but are submissive to military discipline, forming the backbone of the black regiments in the Anglo-Egyptian army.

"In the Revised Version of the Old Testament, Isaiah's prophecy [chap. 18] begins as follows: 'Ah, the land of the rustling wings, which is beyond the rivers of Ethiopia; that sendeth ambassadors by the sea, even in vessels of papyrus upon the waters, saying, Go, ye swift messengers, to a nation tall and smooth, to a people terrible from their beginning onward, a nation that meteth out and treadeth down, whose land the rivers divide!' 'The sea,' it must be remembered, is the name still given by the natives of Egypt and the Sudan to the Nile, which at the time of the inundation looks like a veritable sea; and the word translated 'papyrus' is properly a 'reed,' and denotes, as acquaintance with the sudd has now informed us, not the papyrus, but its companion reed, the ambach. The Revised Version, 'a nation that meteth out and treadeth down' is, moreover, less accurate than the Authorized rendering, 'a nation meted out and trodden down,' though neither is quite exact. The reading of the Hebrew original, in fact, is uncertain; as it stands, the word rendered 'meted out' is literally 'line of line,' in which some commentators have seen a reference to the custom of which we have a record in II Samuel 8:2, where we are told that David measured his Moabite captives with two lines, 'to put to death and one full line to keep alive.' In any case, Isaiah alludes here to slave hunting; the nation of whom he speaks was bound with the fetters of a slave and 'crushed' by slavery."

The Ethiopian king was planning a campaign against the Assyrian invaders of Palestine, and accordingly summoned recruits from the semi-subject negro population of the Sudan. It was with these soldiers that the Ethiopian kings subjected Egypt to their control. With their help the Ethiopian kings of Egypt, So or Shabaka, and his successor, Tirhakah, checked the Assyrian advance and drew away Sennacherib's army when he first threatened Jerusalem. This deferred the siege of Jerusalem till the unwholesome season; pestilence followed, and the withdrawal of the army from before the city. [See *Sunday School Times*, May 1, 1909.]

LATE CELTIC RUBBISH HEAP NEAR OARE, WILTSHIRE.—On the high ground about a mile northeast from Oare, Wiltshire, England, is a low, irregularly shaped mound which is an ancient rubbish heap. The mound is only 100 yds. from the rampart of the large earthwork known as Martinsell Camp. The mound is 63 ft. long by 43 ft. across the widest part, and is never more than 2½ ft. above the ground level. Large numbers of potsherds have been found in it; so many, in fact, that it has been suggested that it represented the accumulated debris of a pottery. As none of the pottery fragments show evidence of being rejects, and as there were none if the objects found which are particularly likely to have been used by a potter, a different explanation seems necessary. There are numerous fragments of bones, particularly of the sheep, pig and ox, and the pottery is all in fragments; facts, which together with the occurrence of odds and ends which had been rendered useless before being

added to the pile, indicate that it is simply the accumulation of rubbish from some dwelling near by.

The pottery is in general of two kinds, *i. e.*, native and imported. Two-thirds of the native pottery fragments are of one type, bowls with beaded rims. The sizes vary from ones holding not more than a gill to those holding a gallon or more. Most of the bowls are of gray ware, varying from very pale gray to black; others are brown of various shades, and occasionally there is bright red. Often the paste is mixed with sand, pounded flint or quartz. The surface is often very smooth, finely tooled and polished. They are devoid of ornament except for incised lines around the shoulders of a few. Jugs, jars, flat plates or saucers of native manufacture are also represented. All were wheel-turned and well made and baked.

The bowls with bead rims so common at this point appear to be a purely British type and characteristic of late Celtic pottery.

The imported pottery includes a fragment of Belgic black ware of the I century A. D.; a fragment of green glazed Roman ware; pieces of thin white and cream-colored pottery, perfectly baked, hard and smooth, possibly from Rheims; fine micaceous buff-colored ware, painted gray on the outside and red on the inside with "roulette" ornamentation; pieces of Arretine ware, two of which show part of a maker's stamp. One of these seems to end in the letters PLEV, an unknown stamp. The other shows the two letters AT, which Mr. Reginald Smith thinks may be part of the name ATEIVS, which occurs on a number of British Museum specimens.

Fragments of Arretine ware are rare in Britain. Enough is known of the date of its manufacture to aid in dating this mound. The art of making this ware was introduced into Gaul in the early years of the I century A. D. The name of Ateivs seems to have been that of an important manufacturer during the reign of Augustus.

Samian pottery—a red glazed Gaulish ware—is entirely absent from the mound at Oare, indicating that its site was abandoned before that ware was in the market, *i. e.*, before 30 A. D.

Three fibulae were found, two of iron and one of bronze, the latter of a later type, "the end of the bow is flattened to cover the spiral spring, and the spring is a separate piece of metal. The pin was of iron and worked on a sort of a hinge on the small bar of iron on which the spring is coiled."

Mr. Smith considers these fibulae as belonging to the century from 50 B. C. to 50 A. D., which agrees with the evidences of date mentioned above. Altogether, the early years of the Christian era seem to have been the time when this rubbish heap was formed.

"Among the other objects found were two iron sickle-shaped keys, a sling stone of baked clay, an iron bridle bit, a pair of bronze tweezers, the handle of a weaving comb, a bone gouge, several worked bones, 8 pottery spindle-whorls, 6 discs or roundels of pottery, fragments of worn quern stones, pieces of brick and iron slag."

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